DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AIR QUALITY CONTROL CONSTRUCTION PERMIT

Permit No.: AQ0072CPT03 **Date: Final – May 3, 2005**

The Department of Environmental Conservation (Department), under the authority of AS 46.03, AS 46.14, AS 46.40, 6 AAC 50, 18 AAC 15 and 18 AAC 50.315, issues an Air Quality Control Construction Permit to the Permittee listed below.

Operator and Permittee:	**Alyeska Pipeline Service Company** 900 E. Benson Blvd. Anchorage, AK 99508
Owner:	Owners of the Trans-Alaska Pipeline System
Stationary Source:	**Trans-Alaska Pipeline System Pump Station 1**
Location:	Latitude: 70° 15’ 26” North; Longitude 148° 37’ 04” West
Physical Address:	Sections 32 and 33, T11N, R14E Umiat Meridian
Permit Contact:	Don Mark Anthony (907) 450-7652

The Department authorizes the Permittee to install three turbines and one reciprocating internal combustion engine at Pump Station 1, as part of the **Strategic Reconfiguration Project**.

This permit satisfies the obligation of the Permittee to obtain a construction permit as set out in AS 46.14.130. As required by AS 46.14.120, APSC shall comply with the terms and conditions of this construction permit.

This stationary source is classified under 18 AAC 50.300(b)(2) and 18 AAC 50.300(c)(1). The project is a modification classified under 18 AAC 50.300(h)(2).

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John F. Kuterbach, Manager
Air Permits Program

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Abbreviations/Acronyms

AAC .....Alaska Administrative Code
ADEC.....Alaska Department of Environmental Conservation
AS.....Alaska Statutes
ASTM.....American Society of Testing and Materials
CEMS.....Continuous Emission Monitoring System
C.F.R. .....Code of Federal Regulations
DLE.....Dry Low Emissions
EPA .....Environmental Protection Agency
HHV .....Higher heating value
ISO .....International Standard Organization
LHV.....Lower Heating Value
mr&r.....Monitoring, recordkeeping, and reporting
MACT .....Maximum Achievable Control Technology
NA.....Not Applicable
NAICS .....North American Industry Classification System
NESHAPS .....National Emission Standards for Hazardous Air Pollutants
NSPS .....New Source Performance Standards
PS .....Performance specification
PS 1 .....Pump Station 1
PSD.....Prevention of Significant Deterioration
RICE.....Reciprocating Internal Combustion Engine
SIC.....Standard Industrial Classification
SN.....Serial Number
TBD.....To Be Determined

Units and Measures

bhp.....brake horsepower or boiler horsepower [1]
gr./dscf.....grains per dry standard cubic feet (1 pound = 7,000 grains)
dscf.....dry standard cubic foot
gph.....gallons per hour
kW.....kiloWatts
kW-e.....kiloWatts electric[2]
mmBtu.....million British Thermal Units
ppm.....parts per million
ppmv.....parts per million by volume
tph.....tons per hour
tpy.....tons per year
wt%.....weight percent

Pollutants

CO .....Carbon Monoxide
HAPS.....Hazardous Air Pollutants
H_2S .....Hydrogen Sulfide
NO_X .....Oxides of Nitrogen
NO_2.....Nitrogen Dioxide
NO.....Nitric Oxide
PM-10.....Particulate Matter with an aerodynamic diameter less than 10 microns
SO_2 .....Sulfur Dioxide
VOC .....Volatile Organic Compound

[1] For boilers: One boiler horsepower is equal to 33,472 Btu per hour divided by the boiler's efficiency. For reciprocating internal combustion engines: One brake horsepower is equal to approximately 7,000 Btu per hour.
[2] kW-e refers to rated generator electrical output rather than engine output.

Section 1 Permit Terms and Conditions

Emission Unit Inventory and Description

1. Authorization. The Permittee may install Emission Units 23 through 26 described in Table 1, or replacement units as described in condition 1.1, at this stationary source in accordance with the terms and conditions of this permit and the original construction permit application and subsequent submittals listed in Section 2. The Permittee shall configure Emission Units 23 through 25 with Dry Low Emissions (DLE) Technology.

Table 1 - Construction Permit Emission Unit Inventory[a]

No.	Type	Make/Model	Fuel	Rating/Size
23	Combustion Turbine Generator with DLE	Siemens Cyclone	Natural Gas	12.9 MW ISO[b]
24	Combustion Turbine Generator DLE	Siemens Cyclone	Natural Gas	12.9 MW ISO[b]
25	Combustion Turbine Generator with DLE	Solar Taurus 60S	Natural Gas	5.2 MW ISO[b]
26	Reciprocating Internal Combustion Engine	To Be Determined (TBD)	Diesel	65 kW-e

Table Notes:
[a] Except as noted elsewhere in this permit, the information in this table is for identification purposes only.
[b] International Standards Organization (ISO) standard day conditions means 288 degrees Kelvin, 60 percent humidity and 101.3 kilopascals pressure, as described in 40 C.F.R. 60.331.

1.1 If the Permittee elects to install a replacement of a unit listed in Table 1, at least 30 days before installation of the replacement unit, submit to the Department's Fairbanks office a demonstration that the maximum emission rates of NO_X, CO, PM-10 and VOC for the replacement unit are equal to or less than those from the unit it is replacing.

1.2 At least five days before initial startup[3] of Emission Units 23 through 26 or replacement units, submit the following to the Department's Fairbanks office:

a. vendor specification sheets that identify the unit type, make and model (including model number), serial number and rating/size;

b. the installation date and estimated date of startup.

1.3 Unless an extension is granted by the Department in writing as indicated in condition 1.4, decommission[4] existing Emission Units 1 through 3, 5, 8, 9 and 11 through 15 listed in Table 1 of initial Operating Permit 072TVP01 within 270 calendar days[5] after initial startup of any Emission Unit 23 through 26 or replacement unit.

[3] *Initial startup* means when an emission unit is first fired to the nearest hour.
[4] *Decommission* means the fuel systems and generator electrical leads have been disconnected.
[5] The *initial startup period* lasts 270 days after *initial startup.*

1.4 The Department may allow an extension of the "initial startup period" for due cause. Submit a request for an extension in writing to the Department's Fairbanks office within 240 days of initial startup of any Emission Unit 23 through 26 or replacement unit. Include a description of the reason for the extension. The Department will grant an extension of up to 90 days if the Department finds due cause exists.

1.5 Record the number of hours each month that Dry Low Emissions (DLE) Technology for Emission Unit 25 has been disabled.

1.6 Include the following with the next operating report described in condition 54 of initial Operating Permit No. 072TVP01:

a. the actual initial startup dates for each Emission Unit 23 through 26 or replacement units.

b. the decommissioning dates for each Emission Unit 1 through 3, 5, 8, 9 and 11 through 15.

c. copies of the notifications and records required by conditions 1.1 and 1.2.

1.7 Include with each operating report described in condition 54 of initial Operating Permit No. 072TVP01, a summary of any hours that Emission Unit 25 operated with DLE disabled for that reporting period.

Ambient Air Quality Protection Requirements

2. Operational Limits (NO_X, SO_2). The Permittee shall restrict 12 consecutive month total operating hours of Emission Unit 26 to less than 300 total hours to protect ambient air quality.

2.1 Monitor and record hours that Unit 26 operated for each month.

2.2 By the last day of each month, add the previous month's total to preceding 11 months to get the 12 consecutive months' total.

2.3 Report as described in condition 52 of initial Operating Permit No. 072TVP01 if the 12-month total exceeds the limit in condition 2.

2.4 Include copies of records required under conditions 2.1 and 2.2 with the operating report for that period as described in condition 54 of initial Operating Permit No. 072TVP01.

3. Fuel Sulfur (SO_2). The Permittee shall comply with SO_2 ambient air quality standards and increments as follows:

3.1 Limit the hydrogen sulfide (H_2S) content of fuel gas to no greater than 150 parts per million by volume (ppmv). Monitor as described in condition 7.1a of initial Operating Permit No. 072TVP01, and report as described in condition 52 of initial Operating Permit No. 072TVP01 any time the fuel gas H_2S content exceeds 150 ppmv.

3.2 Limit the diesel fuel sulfur content to no greater than 0.20 percent by weight. Monitor as described in condition 7.2a of initial Operating Permit No. 072TVP01, and report as described in condition 52 of initial Operating Permit No. 072TVP01 any time the diesel fuel sulfur content exceeds 0.2 percent by weight.

3.3 Include copies of records required under conditions 3.1 and 3.2 with the operating report described in condition 54 of initial Operating Permit 072TVP01.

Owner Requested Limits to Avoid Project Classification as a PSD Major Modification

4. Carbon Monoxide (CO) Limit. For Units 23 through 25, the Permittee shall:

a. use the following limits that are based on vendor data, and as indicated in condition 4.c:[6]

(i) until the Permittee develops unit-specific operating limits in accordance with condition 6, for Unit 23 and 24,

(A) limit operating hours in Tier 3 ($H_{Tier\ 3}$) to no more than 1,867 hours per 12 consecutive months; and

(B) limit operating hours in Tier 2 ($H_{Tier\ 2}$) as defined in Equation 1:

Equation 1[7] $$H_{Tier\,2} = 4{,}101.8 - 2.1929(H_{Tier\,3})$$

Where: H_{Tier3} = number of hours in Tier 3 (maximum 1,867);
H_{Tier2} = number of hours in Tier 2; and

(ii) for Unit 25, limit operating hours in Tier 3 to no more than 50 hours per 12 consecutive months.

b. after APSC develops unit-specific operating limits for Units 23 and 24 in accordance with condition 6, use the revised operating hour limits developed in accordance with condition 6 and as indicated in condition 4.c;

[6] In this permit, Tier 1 operating mode means operation at greater than 60 percent load, Tier 2 means operation at less than or equal to 60 percent load but greater than 50 percent load, and Tier 3 means operation at less than or equal to 50 percent load, with loads calculated as indicated in condition 4.2b.

[7] Letter from Jordan Jacobson to Bill Walker, "Comments to Draft Construction Permit No. AQ0072CPT03 for TAPS Pump Station 1", dated April 6, 2005, Attachment 2, page 1 of 12. APSC developed this equation based on vendor data.

c. The Permittee may exclude from any limit listed in conditions 4.a or 4.b, all Tier 2 and Tier 3 operation that is solely for the purpose of conducting source tests required by this permit.

d. for **Emission Units 23 and 24**, ensure the **hourly average**[8] minimum intake temperature is above minus 20 degrees Fahrenheit by preheating intake air.

4.1 For Units 23 through 25 separately, record the **hourly average** turbine intake temperature (T) in degrees Fahrenheit.

4.2 For Units 23 through 25 separately, using an hour meter, monitor and record the hourly load, calculated as follows:

a. Measure and record the **hourly average** power output in kW.

b. For each hour, based on T recorded in condition 4.1, calculate the maximum turbine load in kW for that hourly temperature as follows:

(i) For Units 23 and 24:[9]

(A) If T is less than or equal to minus 20 degrees Fahrenheit:

$$L_{MAX} = 14{,}278;$$

(B) If T is between minus 20 degrees Fahrenheit and plus 20 degrees Fahrenheit:

$$L_{MAX} = 14{,}671 + 15.35T - 0.215T^2; \text{ and}$$

(C) If T is above plus 20 degrees Fahrenheit:

$$L_{MAX} = 16{,}039 - 60.43T$$

Where: L_{MAX} = Maximum turbine load in kW
T = Hourly temperature in degrees Fahrenheit

(ii) For Unit 25:[10] $L_{MAX} = 6{,}172 - 18.171T$

c. Calculate the hourly percent load for each hour by dividing the actual power output in kW recorded in condition 4.2a by the maximum load calculated in condition 4.2b.

[8] For this permit, hourly average shall be calculated using a minimum of one data point every 15 minutes, excluding periods of startup not to exceed 10 minutes.
[9] Email from Jeff Alger March 4, 2005
[10] Email from Jeff Alger March 7, 2005

4.3 Sample fuel gas quarterly and calculate heat content (in mmBtu/lbm) in accordance with ASTM D3588 or another method approved by the department.

4.4 No later than the last day of each month, calculate:

a. the total number of hours Units 23 and 24, combined, operated in Tier 3 for the previous month, then add that total to the total for the preceding 11 months to get the 12-month total;

b. the total number of hours Units 23 and 24, combined, operated in Tier 2 for the previous month, then add that total to the total for the preceding 11 months to get the 12-month total; and

c. the total number of hours Unit 25 operated in Tier 3 for the previous month, then add that total to the total for the preceding 11 months to get the 12-month total.

4.5 Report as excess emissions as described in condition 52 of initial Operating Permit 072TVP01 any time:

a. the cumulative 12-month total operating hours for Units 23 through 25 exceed any limit in condition 4.a or 4.b;

b. the **hourly average** turbine intake temperature for Units 23 or 24 is below the limit in condition 4.d.

4.6 Report as described in condition 54 of initial Operating Permit No. 072TVP01:

a. the monthly and 12 consecutive month total operating hours in each tier for Units 23 and 24 combined, and Unit 25;

b. the quarterly fuel heat content (LHV); and

c. the minimum **hourly average** turbine intake temperature for Units 23 and 24.

5. CO Emissions Source Tests. The Permittee shall conduct source tests as follows:

5.1 Within 365 days of startup of the first of Emission Unit 23 or 24 (Cyclone Turbines), conduct CO and oxygen source tests in June, July or August (to represent summertime) and one CO and oxygen source test in December, January, or February (to represent wintertime) as described in Section 9 of initial Operating Permit No. 072TVP01, on one of Units 23 or 24, and as follows:

a. The wintertime source test shall be at less than zero degrees Fahrenheit.

b. Test either Emission Unit 23 or 24 in the following three load ranges (adjusted for maximum load at different temperatures as indicated in condition 4.2b):

(i) Less than or equal to 60 percent (to represent Tier 1).

(ii) Less than or equal to 50 percent (to represent Tier 2).

(iii) Less than or equal to 25 percent (to represent Tier 3).

c. During each run, monitor and record the unit's electric load, turbine inlet temperature, and fuel consumption (using a fuel meter accurate to within two percent of full scale) no less than once every 15 minutes.

d. Obtain for the fuel used during the testing the fuel-specific LHV, or calculate the LHV for a representative sample of the fuel in accordance with ASTM D 3588.

e. For each load range, determine the load-specific CO emission concentration in ppmv, corrected to 15 percent oxygen.

5.2 Within 365 days of startup of Emission Unit 25 (Solar Turbine), the Permittee shall conduct one CO and oxygen source test in June, July, or August (to represent summertime) and one CO and oxygen source test in December, January, or February (to represent wintertime) as described in Section 9 of initial Operating Permit No. 072TVP01, and as follows:

a. The wintertime source test shall be at less than zero degrees Fahrenheit.

b. Test Emission Unit 25 in the following two load ranges (adjusted for maximum load at different temperatures as indicated in condition 4.2b):

(i) Less than or equal to 50 percent (to represent Tier 1 and 2);

(ii) Less than or equal to 25 percent (to represent Tier 3).

c. During each run, monitor and record the unit's electric load, turbine inlet temperature and fuel consumption (using a fuel meter accurate to within two percent of full scale) no less than once every 15 minutes.

d. Obtain for the fuel used during the testing the fuel-specific LHV, or calculate the LHV for a representative sample of the fuel in accordance with ASTM D 3588.

e. Determine the load-specific CO emission concentration in ppmv, corrected to 15 percent oxygen.

5.3 Submit information collected in conditions 5.1 and 5.2, including the methodology used to calculate heat input during the source test, in each source test report as described in condition 44 of initial Operating Permit No. 072TVP01.

6. Unit Specific Operating Hour Limits. Develop unit-specific operating hour limits based on source test data as follows:

6.1 Table 2 and Table 3 show the emission concentrations used to develop the initial operating hour limits in condition 4.a(i), based on vendor data. Except as indicated in condition 6.2, after both the summer and winter source tests required under condition 5, replace the operating hour limits in condition 4.a(i) with unit-specific operating hour limits developed as follows:

a. Adjust all **wintertime** emission concentrations for Units 23 and 24 shown in Table 2 for each load range (Tiers 1, 2 and 3) separately. Increase by the highest percent increase or decrease by the lowest percent decrease for that load range during the wintertime test using lineal interpolation.

b. Adjust all **summertime** emission factors for Units 23 and 24 shown in Table 2 for each load range (Tier 1, 2 and 3) separately. Increase by the highest percent increase or decrease by the lowest percent decrease for that load range during the summertime test using lineal interpolation.

Table 2 - CO Emission Rates for Emission Units 23 and 24 Burning Fuel Gas (ppmvd) and corrected to 15 percent Oxygen, Based on Vendor Data[a]

Source Test Average Load (Percent)[b]	Source Test Turbine Inlet Temperature, T, degrees Fahrenheit								
	T≥90	80≤T<90	60≤T<80	40≤T<60	20≤T<40	0≤T<20	Minus 10≤T<0	Minus 20≤T<Minus 10	T≤Minus 20
	Summertime				Wintertime				
Load>60 (Tier 1)	60	60	60	60	60	60	60	60	60
60≥Load>50 (Tier 2)	65	65	65	65	65	650	1,300	1,650	1,650
Load≤50 (Tier 3)	2,600	2,600	2,600	2,600	3,250	3,900	5,200	5,850	5,850

Table Notes:
[a] Emission rates in ppmvd are the emission rates based on vendor data that were used to develop the equations in condition 4.a(i), as described in the application and revised in the April 6, 2005 comments n the draft permit.
[b] Take into account the change in maximum load with temperature.

c. Adjust all **wintertime** emission concentrations for Unit 25 shown in Table 3 for each load range (Tiers 1, 2 and 3) separately. Increase by the highest percent increase or decrease by the lowest percent decrease for that load range during the wintertime test using lineal interpolation.

d. Adjust all **summertime** emission factors for Unit 25 shown in Table 3 for each load range (Tier 1, 2 and 3) separately. Increase by the highest percent increase or decrease by the lowest percent decrease for that load range during the summertime test using lineal interpolation.

Table 3 - CO Emission Rates for Emission Unit 25 Burning Fuel Gas (ppmvd) and corrected to 15 percent Oxygen, Based on Vendor Data[a]

Source Test Average Load (Percent)[b]	Source Test Turbine Inlet Temperature, T, degrees Fahrenheit	
	T > 0	T ≤ 0
	Summertime	Wintertime
Load>50 (Tier 1 and 2)	50	188
Load ≤50	4,240	4,240

Table Notes:

[a] Emission rates in ppmvd are the emission rates based on vendor data submitted December 22, 2004 that were used to develop the equations in condition 4.a(ii), as described in the application, and revised in the April 6, 2005 comments on the draft permit.

[b] Take into account the change in maximum load with temperature.

6.2 The Permittee may elect not to replace the operating hour limits for Unit 23 and 24 in condition 4.a(i) with unit-specific operating hour limits if **all** summertime and wintertime source test results for Units 23 through 25 are lower than those assumed in the development of the initial operating limits (shown in Table 2 and Table 3).

6.3 Except as described in condition 6.4, and using Table 4, calculate a linear equation that represents the maximum number of hours that Units 23 and 24 can operate in Tiers 2 and 3 operating modes, while keeping the estimated emissions below 997.7 tons of CO per year as follows:[11]

a. Fill in CO emission rates (columns 4, 8, 12, 16, and 20) in ppmv from source tests conducted under condition 5.

b. Assume Unit 25 operates 50 hours per year during the coldest month.

c. Select a maximum number of hours that Units 23 and 24 can operate in Tier 3, and replace the limit in condition 4.a(i)(A) with this limit.

d. For Units 23 and 24, initially assign zero hours of operation in Tier 3, and allocate remaining hours to Tier 1. Calculate CO emissions (columns 5, 9, 13, 17 and 21) for each month using Equation 2 and Equation 3. Starting with the coldest months, gradually shift hours from Tier 1 to Tier 2 until total CO emissions equal 997.7 tpy. (This establishes one point on the line.)

Equation 2[12] $E = X(0.002485)$

Where: E = CO emissions in lb per mmBtu, based on LHV of fuel fired.

[11] This condition describes the method used by APSC to determine initial operating limits that were based on vendor data.

[12] Equation 2 is based on Method 19, assuming 15 percent oxygen, and an F_d of 9,652 dscf per mmBtu for fuel gas as provided in application supplement dated January 12, 2005. The equation includes a conversion factor for converting ppmv to lb per scf (lb per scf is equal to ppmvd multiplied by $7.267\ E^{-8}$). Attachment B of the TAR includes the derivation of Equation 2.

X = CO in ppmv, corrected to 15 percent oxygen.

Equation 3 $$CO = (E)(HC)(H)\left(1ton/2000lb\right)$$

Where: CO = CO emissions in tons per month.
E = CO emissions in lb per mmBtu, based on LHV of the fuel fired.
HC = Heat consumption based on LHV of fuel at a given temperature and load (already shown in Table 4 for average monthly ambient temperatures at PS 1).
H = operating hours.

e. Using the maximum number of hours selected in condition 6.3c, repeat the procedure in condition 6.3d to establish a second point on the line that represents the number of hours that 23 and 24 can operate in Tiers 2 and 3.

f. Develop a linear equation using the two points established in conditions 6.3c and 6.3d that represent the results of condition 6.3d, and replace the limit in condition 4.a(i)(B) with the new linear equation.

6.4 Obtain department approval in writing to use another method to calculate revised operating hours limits.

Table 4 - Calculation of Operating Hour Limits Based on Source Test Data

		Siemens Cyclone (Tier 1) (HC calculated at 74 percent load)				Siemens Cyclone (Tier 2) (HC calculated at 59 percent load)				Siemens Cyclone (Tier 3) (HC calculated at 25 percent load)			
Mo	Amb. Temp	Days	HC (mmBtu/hr)	CO[a] (ppmv)	CO (tons)	Days	HC (mmBtu/hr)	CO[a] (ppmv)	CO (tons)	Days	HC (mmBtu/hr)	CO[a] (ppmv)	CO (tons)
Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Jan (31)	-18	62	111.2				96.2				58.3		
Feb (28)	-18	56	111.2				96.2				58.3		
Mar (31)	-14	62	111.8				96.7				58.6		
Apr (30)	3	60	114.0				98.6				59.7		
May (31)	25	62	114.1				98.7				60.0		
Jun (30)	39	60	110.3				95.5				58.7		
Jul (31)	46	62	108.4				93.9				58.0		
Aug (31)	43	62	109.2				94.6				58.3		
Sep (30)	34	60	111.7				96.7				59.2		
Oct (31)	14	62	115.2				99.6				60.3		
Nov (30)	4	60	114.2				98.7				59.8		
Dec (31)	-14	62	111.8				96.7				58.6		
						Solar Taurus (Tier 1 and 2) (HC calculated at 100 percent load)				Solar Taurus (Tier 3) (HC calculated at 25 percent load)			
Mo	Amb. Temp					Days	HC (mmBtu/hr)	CO (ppmv)	CO (tons)	Days	HC (mmBtu/hr)	CO (ppmv)	CO (tons)
Column						(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Jan (31)	-18					29	69.6			2.1	29.2		
Feb (28)	-18					28	68.9						
Mar (31)	-14					31	66.1						
Apr (30)	3					30	62.7						
May (31)	25					31	60.7						
Jun (30)	39					30	59.7						
Jul (31)	46					31	60.1						
Aug (31)	43					31	61.4						
Sep (30)	34					30	64.4						
Oct (31)	14					31	66.0						
Nov (30)	4					30	68.9						
Dec (31)	-14					31	66.6						
Total CO													

Table Notes:
[a] As indicated in conditions 5.1b and 5.2b, CO emission rates for Tier 1 are from source test conducted at 60% load or less, for Tier 2 at 50% load or less, and Tier 3 at 25% load or less.

Title V Permit Administrative Revisions

7. Remove condition 22 from initial Operating Permit 072TVP01 and replace with the following condition 22; this removes the duplicative fuel limits for these emission units.

22. The Permittee shall not allow the operating time for Emission Units 16 through 18 to exceed 23,870 scf/hr per heater, monthly average, or 1,500 hours of operation per calendar year on liquid fuel, combined total.

22.1 Keep monthly records of the operating hours.

22.2 Report in the stationary source operating report required by Condition 54, the combined total hours of operation on liquid fuel for Emission Units 16 through 18 for the previous calendar year.

22.3 Report under Condition 52 any exceedance of the hourly limit in Condition 22.

8. Remove condition 23 from Operating Permit 072TVP01 and replace with the following condition 23; this removes the duplicative fuel limit for this emission unit.

23 The Permittee shall not allow the operating time for Emission Unit 19 to exceed 500 hours for any calendar year on liquid fuel.

23.1 Keep monthly records of the operating hours.

23.2 Report in the stationary source operating report required by Condition 54 the total hours of operation on liquid fuel for Emission Unit 19 for the previous calendar year.

23.3 Report under Condition 52 any exceedance of the hourly limit in Condition 23.

Federal New Source Performance Standards (NSPS) – Subpart A, General Provisions (Emission Unit 23 through 25)

9. Notification and Recordkeeping – 40 C.F.R 60.7(a)(1) and (a)(3). The Permittee shall comply with 40 C.F.R. 60.7(a)(1) and (a)(3).

10. Startup, Shutdown & Malfunction Requirements – 40 C.F.R. 60.7(b). The Permittee shall comply with 40 C.F.R. 60.7(b).

11. Excess Emission and Monitoring Systems Performance Report – 40 C.F.R.60.7(c). The Permittee shall comply with 40 C.F.R. 60.7(c)(1) through (4).

12. Recordkeeping – 40 C.F.R. 60.7(f). The Permittee shall comply with 40 C.F.R. 60.7(f).

13. Performance Tests – 40 C.F.R. 60.8(a) – (f). The Permittee shall comply with 40 C.F.R. 60.8(a) through (f).

14. Good Air Pollution Practice – 40 C.F.R 60.11(d). The Permittee shall comply with 40 C.F.R. 60.11(d).

15. Credible Evidence – 40 C.F.R. 60.11(g). The Permittee shall comply with 40 C.F.R. 60.11(g).

16. Circumvention – 40 C.F.R. 60.12. The Permittee shall comply with 40 C.F.R. 60.12.

17. Monitoring – 40 C.F.R. 60.13(a), (b), (d), (f), (g), (i), and (j). The Permittee shall comply with 40 C.F.R. 60.13(a), (b), (f), and (i), and if a CEMS is installed under 40 C.F.R. 60.334(e), shall also comply with 40 C.F.R. 60.13(d), (e), (g) and (j).

Federal New Source Performance Standards (NSPS) – Subpart GG, Standards of Performance for Stationary Gas Turbines (Emission Units 23 through 25)

18. NO_X Standard - 40 C.F.R. 60.332. On and after the date on which the performance test required by 40 C.F.R. 60.8 (condition 13) is completed, every owner or operator [Permittee] subject to the provisions of Subpart GG as specified in paragraphs (b), (c) and (d) of 40 C.F.R. 60.332 shall comply with the NO_X emission standard of :

18.1 212 ppmvd for Units 23 and 24, except as provided in 40 C.F.R. 60.332(e), (f), (g), (h), (i), (j), (k), and (l); and

18.2 182 ppmvd for Unit 25, except as provided in 40 C.F.R. 60.332(e), (f), (g), (h), (i), (j), (k) and (l).

19. SO_2 Standard - 40 C.F.R. 60.333. On or after the date on which the performance test required to be conducted by 40 C.F.R. 60.8 [condition 13] is completed, every owner or operator [Permittee] subject to the provisions of Subpart GG shall comply with one or the other of the following conditions:

19.1 **40. C.F.R. 60.333(a).** No owner or operator subject to the provisions of Subpart GG shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases that contain sulfur dioxide in excess of 0.015 percent by volume at 15 percent oxygen and on a dry basis.

19.2 **40. C.F.R. 60.333(b).** No owner or operator subject to the provisions of Subpart GG shall burn in any stationary gas turbine any fuel that contains sulfur in excess of 0.8 percent by weight (8000 ppmw).

20. Monitoring - 40 C.F.R. 60.334(e). The owner or operator [Permittee] of any new turbine that commences construction after July 8, 2004, and which does not use water or steam injection to control NO_X emissions may elect to use a NO_X CEMS installed, certified, operated, maintained and quality-assured as described in paragraph (b) of 40 C.F.R 60.334. An acceptable alternative to installing a CEMS is described in paragraph (f) of 40 C.F.R. 60.334 [condition 21].

21. Monitoring - 40 C.F.R. 60.334(f). The owner or operator [Permittee] of a new turbine who elects not to install a CEMS under paragraph (e) of 40 C.F.R. 60.334 (condition 20], may instead perform continuous parameter monitoring as described in 40 C.F.R. 60.334(f)(2).

22. Monitoring - 40 C.F.R. 60.334(h). The owner or operator [Permittee] of any stationary gas turbine subject to the provisions of Subpart GG:

22.1 **40 C.F.R. 60.334(h)(1).** Shall monitor the total sulfur content of the fuel being fired in the turbine, except as provided in paragraph (h)(3) [condition 22.2] of 40 C.F.R. 60.334. The sulfur content of the fuel must be determined using total sulfur methods described in 40 C.F.R. 60.335(b)(10) [condition 26.6]. Alternatively, if the total sulfur content of the gaseous fuel during the most recent performance test was less than 0.4 weight percent (4000 ppmw), ASTM D4084-82, 94, D5504-01, D6228-98, or Gas Processors Association Standard 2377-86 (all of which are incorporated by reference – see 40 C.F.R. 60.17), which measure the major sulfur compounds may be used.

22.2 **40 C.F.R. 60.334(h)(3).** Notwithstanding the provisions of paragraph (h)(1) of 40 C.F.R. 60.334 [condition 22.1], the owner or operator [Permittee] may elect not to monitor the total sulfur content of the gaseous fuel combusted in the turbine, if the gaseous fuel is demonstrated to meet the definition of natural gas in 40 C.F.R. 60.331(u), regardless of whether an existing custom schedule approved by the administrator for Subpart GG requires such monitoring. The owner or operator [Permittee] shall use one of the following sources of information to make the required demonstration:

a. **40 C.F.R. 60.334(h)(3)(i).** The gas quality characteristics in a current, valid purchase contract, tariff sheet, or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20 grains/100 scf or less.

b. **40 C.F.R. 60.334(h)(3)(ii).** Representative fuel sampling data that show that the sulfur content of the gaseous fuel does not exceed 20 grains/100 scf. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of C.F.R. Title 40 is required.

23. Monitoring - 40 C.F.R. 60.334(i). The frequency of determining the sulfur and nitrogen content of the fuel shall be as follows:

23.1 **40 C.F.R. 60.334(i)(2).** *Gaseous Fuel.* The Permittee shall comply with 40 C.F.R. 60.334(i)(2).

23.2 **40 C.F.R. 60.334(i)(3).** *Custom Schedules.* Notwithstanding the requirements of 40 C.F.R. 60.334(i)(2) [condition 23.1] operators [Permittees] or fuel vendors may develop custom schedules for determination of the total sulfur content of gaseous fuels, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in paragraphs (i)(3)(i) and (i)(3)(ii) of 40 C.F.R. 60.334 [conditions 23.2a and 23.2b], custom schedules shall be substantiated with data and shall be approved by the Administrator before they can be used to comply with the standard in 40 C.F.R. 60.333.

a. **40 C.F.R. 60.334(i)(3)(i).** The two custom sulfur monitoring schedules set forth in paragraphs (i)(3)(i)(A) through (D) (including (C)(1) through (3)) and in paragraph (i)(3)(ii) of 40 C.F.R. 60.334 [condition 23.2b] are acceptable without prior Administrator approval.

b. **40 C.F.R. 60.334(i)(3)(ii).** The owner or operator [Permittee] may use the data collected from the 720-hour sulfur sampling demonstration described in section 2.3.6 of appendix D to part 75 of C.F.R. Title 40 to determine a custom sulfur sampling schedule, as described in 40 C.F.R. 60.334(i)(3)(ii)(A) through (D).

24. Monitoring - 40 C.F.R. 60.334(j). For each affected unit required to continuously monitor parameters or emissions, or to periodically determine the fuel sulfur content or fuel nitrogen content under Subpart GG, the owner or operator [Permittee] shall submit reports of excess emissions and monitor downtime in accordance with 40 C.F.R. 60.7(c) [condition 11]. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction. For the purpose of reports required under 40 C.F.R. 60.7(c) [condition 11], periods of excess emissions and monitor downtime that shall be reported are defined as follows:

24.1 *For nitrogen oxides* [for turbines required to monitor combustion parameters under 40 C.F.R. 60.334(f) - condition 21] in 40 C.F.R. 60.334(j)(1)(iv)(A) and (B).

24.2 *For sulfur dioxide* [for turbines required to monitor under 40 C.F.R. 60.334(h) - condition 22] in 40 C.F.R. 60.334(j)(2)(i) through (iii).

24.3 *For Ice Fog* - each period during which an exemption provided in 40 C.F.R. 60.332(f) is in effect shall be reported as indicated in 40 C.F.R. 60.334(j)(3).

24.4 The Permittee shall submit reports required under 40 C.F.R. 60.7(c) [condition 11] in accordance with 40 C.F.R. 60.334(j)(5).

25. 40 C.F.R. 60.335(a). The owner or operator [Permittee] shall conduct the performance tests required in 40 C.F.R. 60.8 (condition 13) using a method described in:

25.1 40 C.F.R. 60.335(a)(1) through (4);

25.2 40 C.F.R. 60.335(a)(5)(i) and (ii);

25.3 40 C.F.R. 60.335(a)(6).

26. 40 C.F.R. 60.335(b). The owner or operator [Permittee] shall determine compliance with the applicable nitrogen oxides emissions limitation in 40 C.F.R. 60.332 and shall meet the performance test requirements of 40 C.F.R. 60.8 [condition 13] as follows:

26.1 as indicated in 40 C.F.R. 60.335(b)(1);

26.2 as indicated in 40 C.F.R. 60.335(b)(2);

26.3 as indicated in 40 C.F.R. 60.335(b)(6), [if using CEMS];

26.4 as indicated in 40 C.F.R. 60.335(b)(7), [if using CEMS];

26.5 as indicated in 40 C.F.R. 60.335(b)(8).

26.6 if the owner or operator is required under 40 C.F.R. 60.334(i)(1) or (3) [condition 23.2] to periodically determine the sulfur content of the fuel combusted in the turbine, a minimum of three fuel samples shall be collected during the performance test. Analyze the samples for the total sulfur content of the fuel as indicated in 40 C.F.R 60.335(b)(10)(ii).

26.7 as indicated in 40 C.F.R. 60.335(b)(11).

26.8 as indicated in 40 C.F.R. 60.335(c).

Federal New Source Performance Standards (NSPS) – Subpart KKKK, Standards of Performance for Stationary Combustion Turbines (Emission Units 23 through 25)

27. Notification. No later than 60 days after the final adoption of Subpart KKKK, the Permittee shall submit to the Department a letter indicating whether Subpart KKKK applies to Emission Units 23 through 25 and all necessary supporting documentation for that determination.

28. If Subpart KKKK is applicable, the Permittee shall comply with the applicable requirements of 40 C.F.R. 60 Subpart KKKK as set out in 40 C.F.R. 60.

State Emission Standards

29. Visible Emissions. The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from any Emission Unit 23 through 26 to reduce visibility through the exhaust effluent by any of the following:

a. more than 20 percent for a total of more than three minutes in any one hour;

b. more than 20 percent averaged over any six consecutive minutes.

29.1 For Emission Unit 23 through 25 (gas-fired units), verify compliance with the visible emission standard by certifying annually as described in condition 48 of initial Operating Permit No. 072TVP01 whether the unit burned only natural gas fuel. Report as a permit deviation as described in condition 52 of initial Operating Permit No. 072TVP01 if any other fuel was burned in the unit.

29.2 For Emission Unit 26 (liquid fuel fired unit) listed in Table 1, comply as follows while using liquid fuel:

a. Verify initial compliance with the visible emission standard using either condition 29.2a(i) or 29.2a(ii):

(i) Prior to unit installation, obtain a certified manufacturer guarantee that each emission unit will comply with the visible emission standard and attach a copy of the guarantee to the next operating report described in condition 54 of initial Operating Permit No. 072TVP01;

(ii) Conduct a visible emission observation as described in Section 9 of initial Operating Permit No. 072TVP01 within 90 days after each unit is first fired on liquid fuel. Attach a copy of the Method 9 surveillance records to the next operating report described in condition 54 of initial Operating Permit No. 072TVP01.

29.3 If Unit 26 operates more than 400 hours per calendar year on liquid fuel, monitor, record, and report as described in Section 13 of initial Operating Permit No. 072TVP01.

30. Particulate Matter (PM). The Permittee shall not cause or allow PM emission from any Emission Unit 23 through 26 to exceed 0.05 grains per dry standard cubic foot (gr/dscf) of exhaust gas corrected to standard conditions and averaged over three hours.

30.1 For Emission Unit 23 through 25, the Permittee shall comply with condition 29.1.

30.2 If Emission Unit 26 operates more than 400 hours per calendar year, the Permittee shall monitor, record, and report as described in initial Operating Permit No. 072TVP01 Section 13 for liquid fuel-fired equipment.

31. Sulfur Compound Emissions. The Permittee shall not cause or allow sulfur compound emission, expressed as SO_2, from any Emission Unit 23 through 26 to exceed 500 ppm averaged over three hours.

31.1 For Units 23 through 25 (gas fired equipment):

a. Monitor as described in condition 7.1a of initial Operating Permit No. 072TVP01;

b. If a sample tested under 31.1a exceeds 4,200 ppmv H_2S, prepare a material balance calculation of sulfur compound emissions in ppm, in accordance with Section 14 of initial Operating Permit No. 072TVP01, and if the result exceeds 500 ppm SO_2, report as described in condition 52 of initial Operating Permit No. 072TVP01.

c. Report as described in condition 7.1c of initial Operating Permit No. 072TVP01.

31.2 For Unit 26 (liquid fuel-fired equipment):

a. Monitor as described in condition 7.2a or 7.2b of initial Operating Permit No. 072TVP01.

b. If a sample tested under 31.1a exceeds 0.75 percent by weight Sulfur, prepare a material balance calculation of sulfur compound emissions in ppm, in accordance with Section 14 of initial Operating Permit No. 072TVP01, and if the result exceeds 500 ppm SO_2, report as described in condition 52 of initial Operating Permit No. 072TVP01.

c. Report as described in condition 7.1d of initial Operating Permit No. 072TVP01.

Section 2 Permit Documentation

September 28, 2004	Letter from Gregory T. Jones, Alyeska Pipeline Service Company (APSC), to Jim Baumgartner (ADEC), with an application for an Air Quality Control Construction Permit.
December 15, 2004	Letter from Gregory T. Jones (APSC) to Jeanette Brena (ADEC), with a construction permit application revision.
December 22, 2004	Email from Jeff Alger (RETEC) to Alan Schuler (ADEC) containing PS 1 Solar Taurus Vendor Data.
March 4, 2005	Email from Jeff Alger (RETEC) to Sally Ryan (ADEC), containing Siemans turbine full load equations based on temperature.
March 7, 2005	Email from Jeff Alger (RETEC) to Sally Ryan (ADEC), containing Solar turbine full load equation.
April 6, 2005	Letter from Jordan Jacobsen, APSC, to Bill Walker, ADEC, "Comments to Draft Construction Permit No. AQ0072CPT03 for TAPS Pump Station 1".